

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION.

### Improvements in or relating to Washing Machines.

I, FRIEDRICH EMIL KRAUSS, of German nationality, of Schwarzenberg, Saxony, Germany, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Washing that has been treated in a centrifuge, though drier than hand-wrung washing and usually even drier than washing that has been through a wringing machine, still contains water held fast by capillary attraction, which can only be removed by drying in the air. The washing, when taken out of the centrifuge, is accordingly not yet ready for ironing, so it cannot be further treated immediately.

Now when a washing centrifuge with an air drive is employed, the centrifuge is according to the present invention also used for finishing the drying of the washing, so that the latter can be made ready for ironing immediately after the centrifugal treatment, and can be ironed in immediate conjunction therewith. The cleaning, centrifuging, drying and ironing of the washing therefore admit of being carried out in a continuous operation. For this purpose it is merely necessary to equip the centrifuge with a mounting frame for example, which is placed upon the aperture of the centrifuge casing after taking out the centrifuge drum, so that the current of air produced by the blower flows through the washing hung on the frame. On the other hand the drying frame might alternatively be arranged beside the drum. The centrifuge casing would then be equipped with a door, which would be opened to allow the current of air to flow out of the centrifuge laterally and pass through the washing suspended beside it. Of course the frame

might be of any desired construction, and without direct connection with the centrifuge, so it might even be independently suspended above it.

Finally the motor and the blower may be movably arranged in front of a lateral aperture of the casing, so that it is not necessary, for the purpose of bringing the drum to a standstill, to stop the motor, but only to rock or tilt it through an angle. The drum also no longer need be taken out, but the current of air, during the unloading and loading of the drum, may at the same time serve either to dry washing or else to clear the wash-house of vapours. As a special advantage the result is obtained that the air from the blower is guided out of the casing directly that is to say, it does not undergo any losses of head in its flow by being deflected round bends, and so forth.

The invention is illustrated by way of example in the accompanying drawings, in which

Figure 1 shows the apparatus in elevation;

Figure 2 shows a second constructional example, likewise in elevation;

Figure 3 shows a protective and drying grating in plan;

Figure 4 shows a centrifuge in outside elevation, and

Figure 5 shows a sectional elevation through the centrifuge.

The washing centrifuge may be of any convenient construction, the only essential point being that it works with an air drive. According to the example in Figure 1 it is assumed that in a centrifuge casing *a* are built a motor *b* and a blower *c*. The current of air would also admit of being produced by means of a vacuum cleaner adapted to be put on. It serves to drive a drum *d*, which is sup-

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ported in the centrifuge, and which for this purpose carries driving blades  $d'$ . Beside the centrifuge  $a$  is set up a drying frame  $e'$ , which consists for example of a column  $e$  and a number of groups of radial arms  $f, f'$ . These may be rotatable upon the column  $e$ . The centrifuge  $a$ , which is capable of being uncovered at the top, is equipped in the upper part of its casing  $a'$  with a door  $a''$ , after opening which, and, if desired, taking out the centrifuge drum  $d$ , the current of air produced flows through the washing hanging on the groups of radial arms  $f, f'$ . If the current of air is supplied somewhat laterally, the groups of radial arms, with the washing hanging thereon, may revolve more or less quickly, and the drying of the washing can be carried out quite uniformly. Such a frame might alternatively be designed for mounting upon the top of the centrifuge casing  $a'$ , as indicated in Figure 2. In that case it may be advantageous to construct the arms of the upper cross or star  $f$  longer than those of the lower one  $f'$ .

In order to dry the washed articles individually in succession, it may suffice to employ instead of a frame a simple sieve plate or grating  $g$ , according to Figs. 2 and 3, which is laid upon the aperture of the centrifuge casing  $a'$ , and may be secured thereto. It also admits of being made from a perforated sheet, or else of wire loops, and serves at the same time as a protection against injuries, since it prevents access to the centrifuge casing  $a$  and to the blower.

According to Figures 4 and 5, in the centrifuge casing  $a'$  the drum  $d$  is supported, by means for example of any convenient bearing  $n$ , upon a column  $o$ . For driving purposes the drum  $d$  has the blades  $d'$ . Underneath it the motor  $b$  is arranged, with the blower  $c$ . Now this motor is not fixedly arranged but is movable at will, so that it can be placed with the blower  $c$  facing a lateral aperture  $h$  in the casing  $a$ , and, as far as possible, without having to stop it. For this the motor is preferably rotatably mounted upon a transverse shaft  $k'$ , which carries externally a lever  $i$ , by means of which the motor and blower in the casing  $a$  can be secured either in an upright position for driving the drum  $d$  or in a horizontal position facing the lateral aperture  $h$ .

Now this arrangement can also be used as a means of protection in the driving of the drum  $d$ , to ensure the drive ceasing when the lid  $m$  is opened. For this purpose there is secured to the rotatable shaft  $k'$  of the motor  $b$ , outside the casing  $a$ , an arm  $k$ , which is connected by means of a rod  $l$  with the joint of the lid  $m$ .

If the lid  $m$  is raised, then it tilts the motor  $b$ , with the blower  $c$ , by means of the rodding  $l, k$  described, into the lateral position facing the aperture  $h$ , so that the drum receives no drive, as the air blows out at the side. The lateral aperture  $h$  is protected by a sieve or grating, or the casing wall is perforated like a sieve.

In a similar manner the motor might also be coupled through its rotatable pivot with a brake for the drum, so that with the transposition of the motor and the blower into the lateral position the drum is immediately braked and stopped. This might be effected by means of the same rodding  $k, l$ , with which a brake block, a brake ring or the like would then also be connected.

By shifting the motor and the blower into the lateral position, or by continuing to drive the motor and blower at all when the drum is taken out for example and the cover open, the centrifuge is directly utilised for ventilating the wash-house, since the current of compressed air produced by the blower is now blown into the washing chamber without loss of power, and effects the deposition of the hot vapour by the energetic draught that arises. The same effect also occurs of course to a certain extent when the current of air is used for drying the washing.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A washing centrifuge with air drive, characterised by the feature that the air from the centrifuge casing is used, by directing it to a frame for example, for drying the centrifuged washing.

2. A washing centrifuge as claimed in claim 1, characterised by the feature that the centrifuge casing has a door ( $a''$ ), through which the air can be directed for instance to an airer or frame arranged in front of the door for hanging up the washing.

3. A washing centrifuge as claimed in claim 1, characterised by the feature that the suspension frame for the washing is adapted to be mounted upon an aperture at the top of the centrifuge casing, substantially as illustrated in Fig. 2.

4. A washing centrifuge as claimed in any one of claims 1 to 3, characterised by the feature that the hanging frame is rotatably mounted.

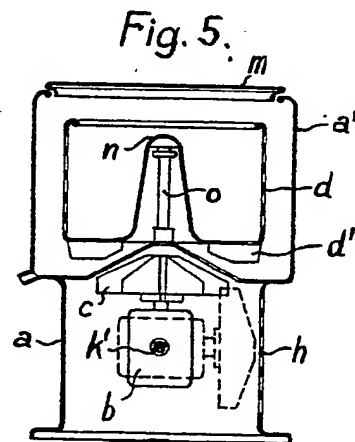
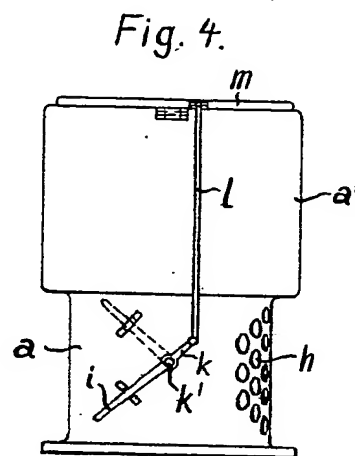
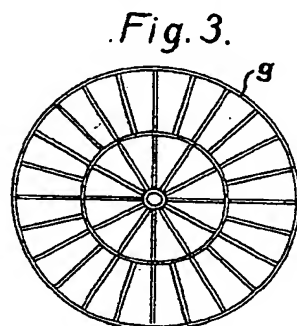
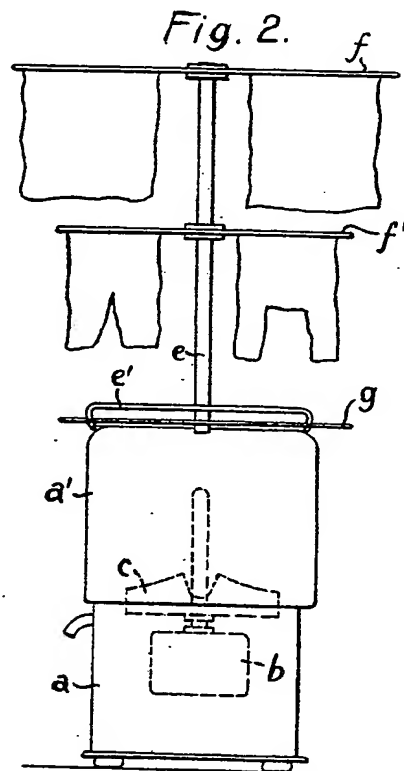
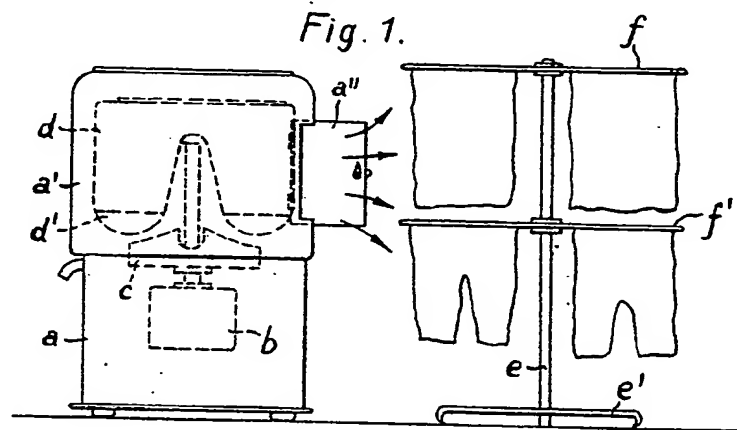
5. A washing centrifuge as claimed in claim 1, characterised by the feature that for laying out the washing there serves a sieve ( $g$ ) capable of being placed upon the aperture at the top of the centrifuge casing and protecting it.

6. A washing centrifuge as claimed in any one of the preceding claims, characterised by the feature that the motor (b) and the blower (c) are movable into a position facing a lateral aperture of the casing (a), substantially as illustrated in Figures 4 and 5. 5
7. A washing centrifuge as claimed in claim 6, characterised by the feature that the motor (b) is supported by a transverse pivot (k') in the casing (a), and is rockable, with the blower (c), into a position facing the lateral aperture (h). 10
8. A washing centrifuge as claimed in claim 7, characterised by the feature that the hinged cover (m) of the centrifuge (a) is coupled to the rocking pivot (k') of the motor (b), and, when opened, throws the latter round into the lateral position. 15
9. A washing centrifuge as claimed in claim 7 or 8, characterised by the feature that the rocking pivot (k') of the motor is so coupled to a brake for the centrifuge drum that the latter comes into action when the motor is shifted round into the lateral position. 20 25
10. A washing centrifuge as claimed in any one of claims 1 to 4 and 6 to 9, characterised by the feature that the current of air produced by the blower is utilized for ventilating the wash-house. 30
11. A washing centrifuge with air drive, substantially as hereinbefore described with reference to the accompanying drawings. 35

Dated this 31st day of January, 1933.  
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[This Drawing is a reproduction of the Original on a reduced scale.]



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